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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/691,583

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Kazuhito Yanadori

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EXAMINER

JACOBSON, MICHELE LYNN

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

10/15/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,583	Applicant(s) YANADORI, KAZUHITO	
	Examiner MICHELE JACOBSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 3/17/08 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1-4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Randle et al (USPN 3,011,525) in view of Ikeda et al (USPN 5,660,210).

3. Randle et al teach a hose comprising an inner rubber layer (reference number 5, Figure 1), an outer rubber layer (reference number 10, Figure 1), at least two reinforcing layers (reference numbers 7 and 9, Figure 1) inserted between the inner and outer rubber layers, and an intermediate rubber layer (reference number 8, Figure 1) interposed between the adjacent reinforcing layers. The reinforcing layers are composed of twisted cords of organic fibers, wherein the twisted cords have 6 turns per inch (col.3, l.10-12), which is within the range of 15 to 30 turns per 10cm. Regarding claim 3, the fibers are made of polyester fibers (col.3, l.10). Regarding claim 4, the twisted cords have a single-twist structure. Regarding claim 6, the reinforcing layers are formed by braids of the twisted cords (col.2, l.58-60). Note the limitation "power steering hose" is a functional limitation within the preamble and receives little patentable weight. The body of the claim provides the structure of the hose and whether the hose is used as a power steering hose or a hydraulic braking hose is not germane to the patentability of the article.

4. Randle et al fail to teach the intermediate elongation at 0.85cN/dtex or the elongation at break of the twisted cords.

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5. However, Ikeda et al teach that when forming a hose having a similar structure of two reinforcing layers made from polyester thread positioned within inner, outer and intermediate rubber layers the elongation of the polyester thread at break is set at about 10% and the intermediate elongation is about 2.7% (see abstract). Ikeda et al further teach that the elongation values of the threads forming the reinforcing layers of the rubber hoses having the structure similar to Randle et al are important and are optimized based on the desired physical properties of the final article. In particular, when the elongation at break is increased the fatigue resistance is increased and the intermediate elongation is increased. The increase in intermediate elongation leads to larger volume expansion. Ikeda also teaches increasing the elongation is too high other physical properties such as tensile strength are adversely affected.(col.2, l.44-67)

6. It has long been an axiom of United States patent law that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003) ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980) ("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."). "Only if the 'results of optimizing a variable' are 'unexpectedly good' can a patent be

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obtained for the claimed critical range." *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (quoting *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977)).

7. Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to realize that Ikeda et al and Randle et al are analogous insofar as both are concerned with fiber reinforced rubber hoses and that the elongation values of the threads or cords forming the reinforcing layers of fiber reinforced rubber hoses are optimized based on the desired volume expansion, fatigue resistance, and tensile strength desired, as taught by Ikeda et al. and that an elongation at break of about 10% and a intermediate elongation value of 2.7% are well known in the art of fiber reinforced rubber hoses, as taught by Ikeda et al. Depending on the final use of the hose, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have optimized the elongation at break for applications requiring stronger hoses.

8. Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select the optimum elongation at break and intermediate elongation value at 0.85cN/dtex within the ranges claimed in claims 1-4, 6 and 8 depending on the intended end result of the hose with regards to volume expansion, fatigue resistance, and tensile strength, as taught by Ikeda et al.

9. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Randle et al in view of Ikeda et al as applied to claims 1-3 above, and further in view of Kuribayashi et al (USPN 5,371,153).

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10. Randle et al and Ikeda et al taken as a whole teach all that is claimed in claims 1-3 and teach that the reinforcing layers are formed by braids of the twisted cords (col.2, l.58-60 of Randle et al). Randle et al and Ikeda et al fail to teach that the twisted cords have a double-twist structure. However, Inada et al teach reinforcing fiber layers for rubber hose reinforcement formed of twisted organic fibers (see abstract and col.1, l.8-13) and teaches that is well known in the art to twist these organic fibers into double-twist structures (col.5, l.1-3) in which a plurality of primary twisted cords are twisted together with final twists in a same twist direction of the primary twisted cords. One of ordinary skill in the art would have recognized that the references are analogous insofar as all three references are concerned with fiber reinforcement layers used in the formation of rubber hoses.

11. Therefore it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select a double-twist structure as the twisted cords of Randle et al and Ikeda et al depending on the intended end result of the hose since double-twist structure are well known and substitutable twist structure for twisted cords used in formation of braided reinforcement layers for rubber hoses, as taught by Kuribayashi et al.

Response to Arguments

12. Applicant's arguments filed 2/15/08 and 3/18/08 have been fully considered but they are not persuasive. Applicant has highlighted on page 4 of the remarks of 2/15/08

and page 3 of the remarks of 3/18/08 the Patent Board of Appeals finding that applicant's argument regarding the calculation of the intermediate elongation value was not supported by sufficient evidence, such as expert declaration, relied upon an assumption without providing the basis for the assumption and did not provide a basis for comparing the individual thread of Ikeda with the twisted cords of claim 1. Applicant has therefore provided a declaration in response to the Patent Board of Appeals finding.

13. Pages 1-4 of applicant's declaration present arguments previously presented to the Patent Board of Appeals which were rejected. It is noted that pages 2-6 of the declaration submitted by applicant are labeled "Opinions". On page 8 of the decision rendered by the Patent Board of Appeals on 3/17/08 it is noted that it was stated that "Appellant's [Applicant's] estimate is not supported by credible evidence, such as an expert declaration, and is admittedly based on assumption". Since applicant's declaration is disclosed to constitute "opinions" it fails to provide concrete evidence to negate the opinion of the Patent Board of Appeals.

14. On pages 4-5 of the declaration, applicant presents rationale for performing the calculation that was previously presented. Applicant asserts that the conversion was performed assuming that "The S-S curve of the fiber is linear" and that the S-S curve represents a relationship of the elongation and the tensile stress of a fiber, wherein within a range in which the tensile stress is relatively small (namely a range in which the tensile stress does not exceed the yield stress), the elongation and the tensile stress are in a proportional or linear relationship, and the range in which such proportional relation is established is called the elastic deformation region. Applicant further states

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that "it can be assumed that the elongation and the tensile stress of a fiber are substantially in a proportional relationship".

15. However, applicant provides no indication of what the proportion of the relationship between the elongation and tensile stress of the fiber is. At least two data points are required to form a line and thus a linear relationship between any two values. Applicant has performed a calculation using only one data point from Ikeda and has provided no mathematical or logical reasoning as to how applicant has determined the slope of this linear relationship in order to extrapolate it to determine other data points. Applicant appears to have arbitrarily assigned a proportion of 1:1 for the slope of the linear portion of the stress strain curve without providing any rationale for doing so. While the examiner accepts applicant's recitation that the relationship between elongation and tensile stress is linear, linear does not automatically translate into a 1:1 relationship, and applicant has provided no reasoning as to how applicant determined the linear relationship between these two values using only one data point. As such, applicant's declaration is not found persuasive and the rejections under 35 USC 103(a) are upheld.

16. Applicant asserts on page 5 of the remarks of 2/15/08 and page 6 of the remarks of 3/17/08 that the addition of claim 8 which recites an elongation at break of the twisted cords ranging from 15.9 to 18.5% when the number of twists is 20/10 cm is commensurate in scope with the claimed unexpected results. Applicant's has previously asserted that the ranges recited in the claims are unexpectedly beneficial. However, Ikeda teaches the concept of balancing the values for intermediate elongation

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and elongation at break in order to achieve the most beneficial physical properties of the fiber such as tensile strength and the hose such as burst strength and volume expansion. (Col. 2, lines 44-67) As such, optimizing the values of intermediate elongation and elongation at break starting from both the low and the high end would have produced the predictable result of producing a fiber with the most beneficial tensile strength and a resulting hose with the desired properties of burst strength and volume expansion.

17. Applicant requests on page 4 of the remarks of 3/17/08 reconsideration of applicant's argument "that one of ordinary skill in the art would not have had a reasonable expectation of success in achieving the claimed power steering hose because the intermediate elongation of Ikeda's reinforcing cord is so small or low that it can never be possible to obtain the vibration-preventive result or the high durability attainable according to the hose of claim 1". The examiner does not find this argument persuasive since, as discussed above, that the declaration presented by applicant fails to reasonably provide a basis for the conversion calculation presented. Furthermore, applicant has claimed that the durability and vibration-preventing results are the unexpected properties for the hose produced. As stated by the Patent Board of Appeals on page 9 of the decision rendered 11/26/07 "In order to show unexpected results, evidence must be commensurate in scope with the claims". Applicant has asserted that durability and vibration prevention are the unexpected results, yet neither of these properties are addressed in the claims.

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18. Applicant contends on page 5 of the remarks of 3/17/08 that Ikeda teaches away from using from intermediate elongation values of more than 0.82%. However, this is not persuasive because applicant's calculations appear to require unsupported assumptions, as discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHELE JACOBSON whose telephone number is (571)272-8905. The examiner can normally be reached on Monday-Thursday 8:30 AM-7 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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